

CLAIMS:

1. A recombinant antibody having a binding activity to 2,3,4,7,8-pentachlorodibenzofuran (2,3,4,7,8-PeCDF), which comprises at least one polypeptide selected from the group consisting of:

(1) a polypeptide constituting the H-chain variable region of monoclonal antibody Dx3860 recognizing 2,3,4,7,8-PeCDF, and having the amino acid sequence as shown in SEQ ID No. 5;

(2) a polypeptide constituting the L-chain variable region of said monoclonal antibody Dx3860, and having the amino acid sequence as shown in SEQ ID No. 6;

(3) a polypeptide constituting the H-chain variable region of monoclonal antibody Dx3150 recognizing 2,3,4,7,8-PeCDF, and having the amino acid sequence as shown in SEQ ID No. 7;

(4) a polypeptide constituting the L-chain variable region of said monoclonal antibody Dx3150, and having the amino acid sequence as shown in SEQ ID No. 8;

(5) polypeptides having amino acid sequences showing not less than 95% of homology to the amino acid sequences of the above polypeptides (1)-(4), and having a binding activity to 2,3,4,7,8-PeCDF; and

(6) polypeptides representing fragments of the above polypeptides (1)-(5), and having a binding activity to 2,3,4,7,8-PeCDF.

2. The recombinant antibody according to claim 1 in which the polypeptides (5) are those having amino acid sequences showing not less than 98% of homology to the amino acid sequences of the polypeptides (1)-(4), and having a binding activity to 2,3,4,7,8-PeCDF.

3. The recombinant antibody according to claim 1 which comprises:

a polypeptide constituting the H-chain variable region of monoclonal antibody Dx3860 and having the amino acid sequence as shown in SEQ ID No. 5, or a polypeptide having an amino acid sequence showing not less than 95% of homology to the amino acid sequence of the former polypeptide and having a binding activity to 2,3,4,7,8-PeCDF; and

10 a polypeptide constituting the L-chain variable region of monoclonal antibody Dx3860 and having the amino acid sequence as shown in SEQ ID No. 6, or a polypeptide having an amino acid sequence showing not less than 95% of homology to the amino acid sequence of the former polypeptide and having a binding activity to 2,3,4,7,8-PeCDF.

4. The recombinant antibody according to claim 1 which comprises:

20 a polypeptide constituting the H-chain variable region of monoclonal antibody Dx3150 and having the amino acid sequence as shown in SEQ ID No. 7, or a polypeptide having an amino acid sequence showing not less than 95% of homology to the amino acid sequence of the former polypeptide and having a binding activity to 2,3,4,7,8-PeCDF; and

25 a polypeptide constituting the L-chain variable region of monoclonal antibody Dx3150 and having the amino acid sequence as shown in SEQ ID No. 8, or a polypeptide having an amino acid sequence showing not less than 95% of homology to the amino acid sequence of the former polypeptide and having a binding activity to 2,3,4,7,8-PeCDF.

5. A DNA encoding the amino acid sequence of the recombinant antibody according to claim 1.

6. A cloning or expression vector comprising the DNA according to claim 5.

5 7. A transformant transformed with the cloning or expression vector according to claim 6.

8. A process for preparing the recombinant antibody according to claim 1, which comprises cultivating the transformant transformed with an expression vector according to claim 7 in a suitable medium, and recovering the recombinant antibody from the transformant or the medium.

10

9. A method for immunologically capturing 2,3,4,7,8-PeCDF, which comprises the use of the recombinant antibody according to claim 1.

15

10. A method for immunologically determining 2,3,4,7,8-PeCDF, which comprises the use of the recombinant antibody according to claim 1.